



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,766	11/29/2001	Jang-Kun Song	06192.0212.NPUS00	1747

7590 02/24/2006
McGuire Woods LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102

EXAMINER

SHAPIRO, LEONID

ART UNIT PAPER NUMBER

2677

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/995,766	Applicant(s) SONG, JANG-KUN	
	Examiner Leonid Shapiro	Art Unit 2677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-19, 22-24, 26-29 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 and 31 is/are allowed.
- 6) ☒ Claim(s) 17-19, 22-24, 27-29 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 17-19, 22-24, 27-29, 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (US Patent No. 6,429,842 B1) in view of Kim et al. (US Patent No. 6,400,424 B1) and Kobayashi et al. (US Patent No. 6,094,192).

As to claim 17, Shin et al. teaches a liquid crystal display (See Fig. 6, items 200, P, T, Col. 3, Lines 3-8), comprising:

a plurality of gate lines extending in a row direction (See Fig. 6, items G1-Gm, Col. 3, Lines 3-11);

a plurality of data lines extending in a column direction (See Fig. 6, items D1-Dn, Col. 3, Lines 3-11);

a plurality of switching elements connected to the gate lines and the data lines (See Fig. 6, items T11-Tmn, Col. 3, Lines 10-13); and

a plurality of pixel electrodes arranged in a matrix and connected to the switching elements (See Fig. 6, items P11-Pmn, Col. 3, Lines 10-13);

wherein, in a row of plurality of pixel electrodes, the plurality of switching elements (or gate of switching elements) connected to the plurality of pixel electrodes are alternatively connected to neighboring gate lines (See Fig. 6, items T11-Tmn, G1-Gm, Col. 3, Lines 21-23).

Art Unit: 2677

Shin does not show a top substrate common electrode, a plurality of pixel electrodes facing the top substrate common electrode, a plurality of common electrode lines extending in the row direction, each of the plurality of common electrode lines placed between the plurality of gate lines.

Kim et al. teaches a top substrate common electrode, a plurality of common electrode lines extending in the row direction, each of the plurality of common electrode lines placed between the plurality of gate lines (See Col. 6, Lines 15-19 and Lines 63-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Kim et al. into Shin et al. system in order to provide a TFT-LCD having enhanced storage capacitance (See Col. 2, Lines 14-15 in the Kim et al. reference).

Shin et al. and Kim et al. do not show a common electrode voltage for storage applied to the plurality of common electrode lines is swung in a predetermined period.

Kobayashi et al. teaches the swung common electrode voltage in a predetermined period (See Fig. 2C, 15a-15b, items V_s , V_g , V_{com} , Col. 6, Lines 52-58).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Moon into Shin et al. and Kim et al. system in order to provide an LCD that can be driven in AC mode (See Col. 3, Lines 34-36 in the Moon et al. reference).

As to claim 18, Shin et al. teaches a data driver for applying data voltages to the data lines in line inversion (See Figs. 5-6, items $T11$ - T_{mn} , $G1$ - G_m , Col. 3, Lines 24-32).

As to claim 19, Shin et al. teaches a polarity of each pixel electrode is inverted every frame (equivalent to the field in the reference) (See Col. 1, Line 17-26).

Art Unit: 2677

As to claim 24, Shin et al. teaches a method for driving a liquid crystal display (See Fig. 6, items 200, P, T, Col. 3, Lines 3-8), including a plurality of gate lines (See Fig. 6, items G1-Gm, Col. 3, Lines 3-11), a plurality of data lines (See Fig. 6, items D1-Dn, Col. 3, Lines 3-11), a plurality of pixel connected to the plurality of gate lines and the plurality of data lines and arranged in a matrix (See Fig. 6, items P11-Pmn, Col. 3, Lines 10-13), method comprising:

applying a first data voltage of a first polarity to the plurality of data lines (See Figs. 6, 7A, items D1-Dn, Col. 3, Lines 33-45);

providing a first scanning signal for odd pixels in a odd row and even pixels in an even row (See Figs. 6, 7A, items P11-P14 , Col. 3, Lines 33-45);

applying a second data voltage of a second polarity opposite to the first polarity to the plurality of data lines (See Figs. 6, 7B, items D1-Dn, Col. 3, Lines 46-51);
and

providing a second scanning signal for odd pixels in even row and even pixels in an odd row (See Figs. 6, 7B, items P21-P24 , Col. 3, Lines 46-51).

Shin et al. does not show a plurality of common electrode lines extending in the row direction, each of the plurality of common electrode lines placed between the plurality of gate lines.

Shin et al. does not show a top substrate common electrode, a plurality of common electrode lines arranged alternately between the plurality of gate lines.

Kim et al. teaches a top substrate common electrode, a plurality of common electrode lines extending in the row direction, each of the plurality of common electrode lines placed between the plurality of gate lines (See Col. 6, Lines 15-19 and Lines 63-67).

Art Unit: 2677

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Kim et al. into Shin et al. system in order to provide a TFT-LCD having enhanced storage capacitance (See Col. 2, Lines 14-15 in the Kim et al. reference).

Shin et al. and Kim et al. do not show supplying the common electrode voltage for storage applied to the plurality of common electrode lines is swung in a predetermined period.

Moon et al. teaches the swung common electrode voltage in a predetermined period (See Fig. 14a-14b, 15a-15b, items V_s , V_g , V_{com} , Col. 6, Lines 52-58).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Moon into Shin et al. and Kim et al. system in order to provide an LCD that can be driven in AC mode (See Col. 3, Lines 34-36 in the Moon et al. reference).

As to claim 29, Shin et al. teaches a method for driving a liquid crystal display (See Fig. 6, items 200, P, T, Col. 3, Lines 3-8), including a plurality of gate lines (See Fig. 6, items G1-Gm, Col. 3, Lines 3-11), a plurality of data lines (See Fig. 6, items D1-Dn, Col. 3, Lines 3-11), a plurality of pixel connected to the plurality of gate lines and the plurality of data lines and arranged in a matrix (See Fig. 6, items P11-Pmn, Col. 3, Lines 10-13), method comprising:

applying a first data voltage of a first polarity to the plurality of data lines (See Figs. 6, 7A, items D1-Dn, Col. 3, Lines 33-45);

providing a first scanning signal to the plurality of first pixels in pairs of neighboring rows (See Figs. 6, 7A, items P11-P14, Col. 3, Lines 33-45);

Art Unit: 2677

applying a second data voltage of a second polarity opposite to the first polarity to the plurality of data lines (See Figs. 6, 7B, items D1-Dn, Col. 3, Lines 46-51); and

providing a second scanning to the plurality of first pixels in pairs of neighboring rows (See Figs. 6, 7B, items P21-P24, Col. 3, Lines 46-51).

Shin et al. does not show a top substrate common electrode, a plurality of common electrode lines extending in the row direction, each of the plurality of common electrode lines placed between the plurality of gate lines.

Shin et al. does not show a plurality of common electrode lines arranged alternately between the plurality of gate lines.

Kim et al. teaches a top substrate common electrode, a plurality of common electrode lines extending in the row direction, each of the plurality of common electrode lines placed between the plurality of gate lines (See Col. 6, Lines 15-19 and Lines 63-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Kim et al. into Shin et al. system in order to provide a TFT-LCD having enhanced storage capacitance (See Col. 2, Lines 14-15 in the Kim et al. reference).

Shin et al. and Kim et al. do not show supplying the common electrode lines with a swinging common electrode voltage.

Moon et al. teaches the swung common electrode voltage in a predetermined period (See Fig. 14a-14b, 15a-15b, items Vs, Vg, Vcom, Col. 6, Lines 52-58).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Moon into Shin et al. and Kim et al. system in order

Art Unit: 2677

to provide an LCD that can be driven in AC mode (See Col. 3, Lines 34-36 in the Moon et al. reference).

As to claims 22-23, Moon et al. teaches the swung common electrode voltage in a predetermined period is a square wave having a period identical or multiple to the image signal (See Fig. 14a-14b, 15a-15b, items Vs, Vg, Vcom, in description See Col. 6, Lines 52-58).

As to claims 27-28, 32-33, Moon et al. teaches the swung common electrode voltage in a predetermined period is a square wave having a period identical or multiple to the image signal (See Fig. 14a-14b, 15a-15b, items Vs, Vg, Vcom, in description See Col. 6, Lines 52-58).

Allowable Subject Matter

2. Claims 26 and 31 are allowed.

3. The following is a statement of reasons for the indication of allowable subject matter:

Relative to claims 26 and 31, the major difference between the teaching of the prior art of record (Shin et al., Moon et al. and Park) and the instant invention is that the said prior art **does not teach** a formula for a swing amplitude of the common electrode voltage.

Art Unit: 2677

Response to Amendment

4. Applicant's arguments filed 06.13.05 with respect to claim 17-19, 22-24, 27-29, 32-33 have been considered but are moot in view of the new ground(s) of rejection.

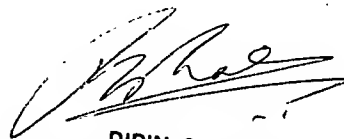
Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LS
02.16.06


BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600